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EXAMINER

RAABE, CHRISTOPHER M

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/664,458	Applicant(s) YAMAZAKI ET AL.	
	Examiner Christopher M. Raabe	Art Unit 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>4/18/07</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 18, 2007 has been entered.

2. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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4. Claims 1-3,9-14,23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamagata (USPN 2002/0070385), in view of Koyama (USPN 2001/0002703, in view of Himeshima et al. (Japanese Patent 09-235546) and Yamazaki et al. (USPN 2002/0074936).

With regard to claim 1,

Yamagata discloses in at least paragraphs 97 and 106 and figures 9A-9C, a light-emitting device comprising: a transistor (963) formed over a substrate (not labeled) a photosensitive organic resin film (939) having an opening; and a light-emitting element having an anode (949), a cathode (951) and a light-emitting layer (950) between the anode (949) and the cathode (951); wherein the photosensitive resin film (939) is in contact with the light emitting layer (950), wherein the transistor (963) is located below the photosensitive organic resin film (939) and simultaneously in a periphery portion of the opening.

Yamagata does not disclose a first passivation film and a second passivation film; wherein the light emitting element is formed between the first and second passivation film, the anode and resin film are in contact with the first passivation film and the cathode is in contact with the second passivation film; a light-emitting layer comprising a dopant at a concentration of 0.1% by weight or more and 0.4% by weight or less; nor wherein an angle of an interface between the insulating (photosensitive organic resin) film and the light emitting layer to the anode sequentially varies.

Koyama does disclose in at least paragraphs 321-331 and figures 11 and 16A-16C a first passivation film (554) and a second passivation film (561); wherein an anode (556) and a resin film (555,557) are formed on the first passivation film (554); wherein the resin film (555,557) and the cathode (559,560) are covered with the second passivation film (561), wherein the anode (556) is in contact with the first passivation film (554) and the cathode

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(559,560) is in contact with the second passivation film (561), relieving spacer pressure and protecting the light emitting element.

Himeshima et al. do disclose in at least paragraph 19 and embodiment 6, a light-emitting layer comprising a dopant at a concentration of 0.1% by weight or more and 0.4% by weight or less, avoiding a concentration quenching effect.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the dopant concentration, as disclosed by Himeshima et al., and the combination of first and second passivation films, as disclosed by Koyama, into the device of Yamagata in order to avoid a concentration quenching effect (paragraph 19 of Himeshima et al.), relieve spacer pressure and protect the light-emitting element (paragraphs 223 and 242 of Koyama).

Yamazaki et al. do disclose in at least figure 1A an angle of an interface between an insulating film (101) and the light emitting layer (102) to the anode (100) to be sequentially varying, allowing an EL film and insulating film to be formed with minimal complication.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the configuration of Yamazaki et al. into the device of Yamagata, in order to form the EL film and insulating film with minimal complication.

With regard to claim 2,

Yamagata discloses in at least paragraphs 97 and 106 and figures 9A-9C, a light-emitting device comprising: a transistor (963) formed over a substrate (not labeled) a photosensitive organic resin film (939) having an opening; and a light-emitting element having an anode (949), a cathode (951) and a light-emitting layer (950) between the anode (949) and the cathode (951); wherein the anode (949), the cathode (951) and the light-emitting layer (950) are overlapped in the opening, wherein the photosensitive resin film (939) is in contact

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with the light emitting layer (950), wherein the transistor (963) is located below the photosensitive organic resin film (939) and simultaneously in a periphery portion of the opening, wherein the light emitting layer (950) comprises copper phthalocyanine as a hole injection material.

Yamagata does not disclose a first passivation film and a second passivation film; wherein an anode and a resin film are formed on the first passivation film; wherein the resin film and the cathode are covered with the second passivation film; a light-emitting layer comprising a dopant at a concentration of 0.1% by weight or more and 0.4% by weight or less, and calcium fluoride as an electron injection layer; nor wherein an angle of an interface between the insulating (photosensitive organic resin) film and the light emitting layer to the anode sequentially varies. However, calcium fluoride was well known to those of ordinary skill in the art at the time of the invention for providing an electron injection layer, and therefore would have been obvious to incorporate into the device of Yamagata.

Koyama does disclose in at least paragraphs 321-331 and figures 11 and 16A-16C a first passivation film (554) and a second passivation film (561); wherein an anode (556) and a resin film (555,557) are formed on the first passivation film (554); wherein the resin film (555,557) and the cathode (559,560) are covered with the second passivation film (561), wherein the anode (556) is in contact with the first passivation film (554) and the cathode (559,560) is in contact with the second passivation film (561), relieving spacer pressure and protecting the light emitting element.

Himeshima et al. do disclose in at least paragraph 19 and embodiment 6, a light-emitting layer comprising a dopant at a concentration of 0.1% by weight or more and 0.4% by weight or less, avoiding a concentration quenching effect.

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It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the dopant concentration, as disclosed by Himeshima et al., and the combination of first and second passivation films, as disclosed by Koyama, into the device of Yamagata in order to avoid a concentration quenching effect (paragraph 19 of Himeshima et al.), relieve spacer pressure and protect the light-emitting element (paragraphs 223 and 242 of Koyama).

Yamazaki et al. do disclose in at least figure 1A an angle of an interface between an insulating film (101) and the light emitting layer (102) to the anode (100) to be sequentially varying, allowing an EL film and insulating film to be formed with minimal complication.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the configuration of Yamazaki et al. into the device of Yamagata, in order to form the EL film and insulating film with minimal complication.

With regard to claim 3

Yamagata discloses a light-emitting device and a photosensitive organic resin (insulating) film, having an opening.

Yamagata does not disclose a radius of curvature of a curve that a section in the opening of the insulating (photosensitive organic resin) film depicts being in the range of from 0.2 to 2 μm .

Yamazaki et al. do disclose a radius of curvature of a curve that a section in the opening of the insulating film depicts being in the range of from 0.2 to 2 μm (paragraph 31), allowing an EL film and insulating film to be formed with minimal complication.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the configuration of Yamazaki et al. into the device of Yamagata, in order to form the EL film and insulating film with minimal complication.

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With regard to claim 8,

Yamagata does disclose in at least figure 12 electronic equipment having a light emitting device wherein the electronic equipment is selected from the group consisting of video cameras, digital cameras, goggle type displays, navigation systems, audio reproducing devices, laptop computers, game machines, portable information terminals, image reproducing devices.

With regard to claim 9,

Yamagata discloses a light-emitting device.

Yamagata does not explicitly disclose the light-emitting element, after turning on for 100 hr with an initial intrinsic brightness set at 320 cd/mm^2 and a duty ratio set at 70%, having a diminishing amount of the intrinsic brightness of substantially 10% or less of the initial intrinsic brightness.

However, the light-emitting element, after turning on for 100 hr with an initial intrinsic brightness set at 320 cd/mm^2 and a duty ratio set at 70%, having a diminishing amount of the intrinsic brightness of substantially 10% or less of the initial intrinsic brightness is a property of the light-emitting device, does not structurally differentiate the light-emitting device from the prior art, as is required of apparatus claims (MPEP 2114).

With regard to claim 10,

Yamagata discloses a light-emitting device.

Yamagata does not explicitly disclose the light-emitting element, after turning on for 1000 hr with an initial intrinsic brightness set at 320 cd/mm^2 and a duty ratio set at 70%, has a

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diminishing amount of the intrinsic brightness of substantially 20% or less of the initial intrinsic brightness.

However, the light-emitting element, after turning on for 1000 hr with an initial intrinsic brightness set at 320 cd/mm² and a duty ratio set at 70%, having a diminishing amount of the intrinsic brightness of substantially 20% or less of the initial intrinsic brightness is a property of the light-emitting device, does not structurally differentiate the light-emitting device from the prior art, as is required of apparatus claims (MPEP 2114).

With regard to claim 11,

Yamagata discloses in at least paragraphs 2 and 17 and figures 5 and 6 a light-emitting device, wherein the light-emitting device includes a transistor (306) that controls a current that is supplied to the light-emitting element (307), wherein both the light-emitting element (307) and the transistor (306) are plurally disposed in a pixel portion (301,304) of the light-emitting device, wherein the pixel portion is disposed on a substrate (not labeled).

Yamagata does not explicitly disclose the light-emitting element wherein when brightness is set at 200 nt when a duty ratio is set at 70%, a temperature of a portion that overlaps with the pixel portion of the substrate is 40 degree centigrade or less.

However, a temperature of a portion that overlaps with the pixel portion of the substrate being 40 degree centigrade or less when brightness of the light-emitting element is set at 200 nt when a duty ratio is set at 70% is a property of the light-emitting device, does not structurally differentiate the light-emitting device from the prior art, as is required of apparatus claims (MPEP 2114).

With regard to claim 12,

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Yamagata discloses in at least paragraphs 2 and 17 and figures 5 and 6 a light-emitting device, wherein the light-emitting device includes a transistor (306) that controls a current that is supplied to the light-emitting element (307), wherein both the light-emitting element (307) and the transistor (306) are plurally disposed in a pixel portion (301,304) of the light-emitting device, wherein the pixel portion is disposed on a substrate (not labeled).

Yamagata does not disclose a temperature of a portion that overlaps with the pixel portion of the substrate being 40 degree centigrade or less when power consumption of the light-emitting element and the transistor is set at 600 mW when a duty ratio is set at 70%.

However, a temperature of a portion that overlaps with the pixel portion of the substrate being 40 degree centigrade or less when power consumption of the light-emitting element and the transistor is set at 600 mW when a duty ratio is set at 70% is a property of the light-emitting device, does not structurally differentiate the light-emitting device from the prior art, as is required of apparatus claims (MPEP 2114).

With regard to claim 13,

Yamagata discloses in at least paragraphs 2 and 17 and figures 5 and 6 a light-emitting device, wherein the light-emitting device includes a transistor (306) that controls a current that is supplied to the light-emitting element (307), wherein both the light-emitting element (307) and the transistor (306) are plurally disposed in a pixel portion (301,304) of the light-emitting device, wherein the pixel portion is disposed on a substrate (not labeled).

The phrase "wherein when brightness of the light-emitting element is set at 130 nt when a duty ratio is set at 70%, a temperature of a portion that overlaps with the pixel portion of the substrate is 35 degree centigrade or less" does not structurally distinguish the claimed invention from the prior art, as is required of apparatus claims (MPEP 2114).

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With regard to claim 14,

Yamagata discloses in at least paragraphs 2 and 17 and figures 5 and 6 a light-emitting device, wherein the light-emitting device includes a transistor (306) that controls a current that is supplied to the light-emitting element (307), wherein both the light-emitting element (307) and the transistor (306) are plurally disposed in a pixel portion (301,304) of the light-emitting device, wherein the pixel portion is disposed on a substrate (not labeled).

Yamagata does not disclose a temperature of a portion that overlaps with the pixel portion of the substrate being 35 degree centigrade or less when power consumption of the light-emitting element and the transistor is set at 400 mW when a duty ratio is set at 70%.

However, a temperature of a portion that overlaps with the pixel portion of the substrate being 35 degree centigrade or less when power consumption of the light-emitting element and the transistor is set at 400 mW when a duty ratio is set at 70% is a property of the light-emitting device, does not structurally differentiate the light-emitting device from the prior art, as is required of apparatus claims (MPEP 2114)

With regard to claim 23,

Yamagata discloses in at least paragraphs 97 and 106 and figures 9A-9C, a light-emitting device comprising: a transistor (963) formed over a substrate (not labeled) a photosensitive organic resin film (939) having an opening; and a light-emitting element having an anode (949), a cathode (951) and a light-emitting layer (950) between the anode (949) and the cathode (951); wherein the anode (949), the cathode (951) and the light-emitting layer (950) are overlapped in the opening, wherein the photosensitive resin film (939) is in contact with the light emitting layer (950), wherein the transistor (963) is located below the

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photosensitive organic resin film (939) and simultaneously in a periphery portion of the opening, wherein the light emitting layer (950) comprises copper phthalocyanine as a hole injection material.

Yamagata does not disclose a first passivation film and a second passivation film; wherein an anode and a resin film are in contact with first passivation film; wherein the resin film and the cathode are covered with the second passivation film; a light-emitting layer comprising a dopant at a concentration of 0.1% by weight or more and 0.4% by weight or less, and calcium fluoride as an electron injection layer; nor wherein an angle of an interface between the insulating (photosensitive organic resin) film and the light emitting layer to the anode sequentially varies. However, calcium fluoride was well known to those of ordinary skill in the art at the time of the invention for providing an electron injection layer, and therefore would have been obvious to incorporate into the device of Yamagata.

Koyama does disclose in at least paragraphs 321-331 and figures 11 and 16A-16C a first passivation film (554) and a second passivation film (561); wherein an anode (556) and a resin film (555,557) are formed on the first passivation film (554); wherein the resin film (555,557) and the cathode (559,560) are covered with the second passivation film (561), wherein the anode (556) is in contact with the first passivation film (554) and the cathode (559,560) is in contact with the second passivation film (561), relieving spacer pressure and protecting the light emitting element.

Himeshima et al. do disclose in at least paragraph 19 and embodiment 6, a light-emitting layer comprising a dopant at a concentration of 0.1% by weight or more and 0.4% by weight or less, avoiding a concentration quenching effect.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the dopant concentration, as disclosed by Himeshima et al., and the combination

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of first and second passivation films, as disclosed by Koyama, into the device of Yamagata in order to avoid a concentration quenching effect (paragraph 19 of Himeshima et al.), relieve spacer pressure and protect the light-emitting element (paragraphs 223 and 242 of Koyama).

Yamazaki et al. do disclose in at least figure 1A an angle of an interface between an insulating film (101) and the light emitting layer (102) to the anode (100) to be sequentially varying, allowing an EL film and insulating film to be formed with minimal complication.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the configuration of Yamazaki et al. into the device of Yamagata, in order to form the EL film and insulating film with minimal complication.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamagata, Koyama, Himeshima et al. and Yamazaki et al. as applied to claim 2 above, and further in view of Yamazaki et al. '320 (USPN 6359320).

With regard to claim 4,

Yamagata discloses a light-emitting device.

Yamagata does not disclose a light-emitting device wherein the photosensitive organic resin film has positive photosensitivity.

Yamazaki et al. '320 do disclose a light-emitting device wherein the photosensitive organic resin film has positive photosensitivity, allowing for small changes in the conductivity of the organic resin film.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the photosensitivity range disclosed in Yamazaki et al. '320 into the device of Yamagata to allow small changes in the conductivity of the organic resin film.

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6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamagata, Koyama, Himeshima et al., and Yamazaki et al. as applied to claim 2 above, and further in view of Tamai et al. (USPN 5793497).

With regard to claim 5,

Yamagata discloses a light-emitting device.

Yamagata does not disclose a light-emitting device wherein the photosensitive organic resin film has negative photosensitivity.

Tamai et al. do disclose a photosensitive organic resin film having negative photosensitivity (column 3, line 64 – column 4, line 6), lowering the conductivity of the organic resin film.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the photosensitivity range disclosed in Tamai et al. into the device of Yamagata in order to lower the conductivity of the organic resin film.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamagata, Koyama, Himeshima et al., and Yamazaki et al. as applied to claim 1 or 2 above, respectively, and further in view of *Producing Monolithic Light Emitting Diode Display Chips* (IBM Technical Disclosure Bulletin Vol. 16, Issue 1, Pg. 6, 6/1/1973).

With regard to claim 6,

Yamagata discloses a light-emitting device.

Yamagata does not disclose the first passivation and second passivation films.

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Koyama does disclose in at least paragraph 242 wherein at least one of the first passivation film and the second passivation film is a carbon nitride film or a silicon nitride film. The obviousness of the passivation films was discussed in the rejections of claims 1 and 2.

Forming a passivation film by an RF sputtering process is disclosed in *Producing Monolithic Light Emitting Diode Display Chips*, efficiently depositing the film.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the RF sputtering process into the device of Yamagata, in order to efficiently deposit the film.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamagata, Koyama, Himeshima et al., and Yamazaki et al. as applied to claim 1 or 2 above, and further in view of Jones et al. (USPN 6069443).

With regard to claim 7,

Yamagata discloses the light-emitting device.

Yamagata does not disclose a passivation film comprising a material selected from the group consisting of DLC, boron nitride and alumina.

Jones et al. do disclose in at least column 8, lines 34-40, a passivation film comprising a material selected from the group consisting of DLC, boron nitride and alumina, providing good resistance to wear, electrical insulation, and thermal conductivity.

It would have been obvious to incorporate the material of Jones et al. into the device of either Yamagata in order to provide good resistance to wear, electrical insulation and thermal conductivity.

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9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamagata, Koyama, and Himeshima et al. and Yamazaki et al. as applied to claim 1 or 2 above, and further in view of Tamano et al. (USPN 5968675).

With regard to claim 15,

Yamagata discloses a light-emitting device.

Yamagata does not disclose the light-emitting layer comprising a quinacridone derivative.

Tamano et al. do disclose in at least column 25 line 59 through column 26, line 7, a light-emitting layer comprising a quinacridone derivative, providing good heat, light and migration fastness, and good weathering.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the substance disclosed by Tamano et al. into the device of Yamagata in order to provide good heat, light and migration fastness, and good weathering.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Raabe whose telephone number is 571-272-8434. The examiner can normally be reached on m-f 7am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CR

Peter Macchiarolo

A handwritten signature in black ink, appearing to read 'Peter Macchiarolo', written over a horizontal line.

Patent Examiner, Art Unit 2879